Planetary Health Report Card:

UC Berkeley - UCSF Joint Medical Program

We acknowledge the Ohlone and Chochenyo people who live in the East Bay and have been here since time immemorial. The Joint Medical Program resides on their land and looks forward to building our solidarity and kinship with native peoples.

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Summary of Findings

Overall	A-

Curriculum	B

- The Joint Medical Program (JMP) does include many planetary health concepts in the curriculum, but it falls short on many topics related to the carbon footprint of the healthcare system, indigenous knowledge, impacted communities, and clinical conversations about environmental hazards. The JMP core curriculum and electives thoroughly cover health impacts of extreme weather and pollution. The case based curriculum offered in the JMP does allow for integration of many concepts of environmental health with the basic science and clinical curriculum.
- **Recommendations:** New developments to the JMP's curriculum improvement structure, such as the PBL working committee, offer opportunity for student and faculty advocacy. We recommend utilization of this setting to increase coverage of planetary health concepts, especially as they pertain to environmental justice and antiracism, within the PBL and Clinical Skills course infrastructures.

Interdisciplinary Research	A

- The JMP is housed within UC Berkeley's School of Public Health, which has multiple dedicated departments for interdisciplinary environmental research. These many departments and faculty members have historically provided mentorship and research opportunities for JMP students in pursuit of their Master's Thesis.
- **Recommendations**: The JMP specifically, rather than the School of Public Health at large, should organize a conference directly related to Planetary Health: this would also provide an important opportunity for medical student advocacy and networking within the field of environmental health.

Community Outreach and Advocacy	A

- UC Berkeley's School of Public Health has a great deal of community outreach related to planetary health within the context of research, advocacy, student groups, and volunteer work.
- **Recommendations**: Relationships with community partners in environmental health should be built out within the JMP specifically, and sustainability updates should be integrated into the JMP's weekly newsletter.

Support for Student-Led Initiatives	B

- The JMP supports student groups dedicated to planetary health, but does not provide faculty sponsorship. JMP students and student groups can receive funding for projects and events related to planetary health from the Associated Students of the University of California, the School of Public Health, the Green Initiative Fund, and the JMP. The UC Berkeley community also offers a variety of student led programming around planetary health, resilience, and advocacy.
- **Recommendations**: Support for student-led initiatives mostly comes from the wider University rather than the Medical School. We recommend the medical school offer increased support to students interested in sustainable initiatives such as a web repository of mentors and funding. Additionally, program requisites towards Quality Improvement should integrate conversations and project opportunities around planetary health.

Campus Sustainability	A-

- UC Berkeley and UCSF have made ambitious progress towards sustainability and carbon neutrality, including fossil fuel divestment and using fully renewable energy on site. The JMP, however, does not utilize all of the sustainability programs made available by both of these campuses..
- **Recommendations**: The JMP should make use of UC Berkeley's green event resources for community meetings. Berkeley Way West has a superior sustainability profile to University Hall; transition of classroom use to the prior should continue.

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance describes planetary health as "a field focused on characterizing the human health impacts of human-caused disruptions of Earth's natural systems." This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanization, biodiversity shifts, natural disasters, climate change, changing land use and land cover, global pollution, and changing biogeochemical flows. The health of humanity is dependent on our environment and our environment is changing rapidly and in disastrous ways. Although the World Health Organization has called climate change "the greatest threat to global health in the 21st century," many medical school's institutional priorities do not reflect the urgency of this danger to human health.

As future health professionals, we must be prepared to address the impacts of human-caused environmental changes on our patients' health. This preparation is in the hands of the institutions providing our medical training. It is imperative that we hold our institutions accountable for educating medical students about the health impacts of climate change and other anthropogenic environmental changes, generating research to better understand health impacts and solutions, supporting related student initiatives, embracing sustainable practices as much as possible, and engaging with surrounding communities that are most affected by environmental threats. Because climate change and environmental threats disproportionately affect vulnerable populations (for example, communities of color, older adults sensitive to health threats, and individuals in low-resource settings), these issues are inherently ones of equity and justice.

With the purpose of increasing planetary health awareness and accountability among medical schools, we have created a Planetary Health Report Card that medical students internationally can use to grade and compare their home institutions on an annual basis. This medical-student-driven initiative aims to compare medical schools nationally and internationally on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in health and environment, 3) University support for student planetary health initiatives, and 4) community outreach centered on environmental health impacts 5) medical school campus sustainability.

Definitions & Other Considerations

Definitions:

- **Planetary Health:** is described by the *Planetary Health Alliance* as "the health of human civilisation and the state of the natural systems on which it depends". For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional 'environmental health' examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term "planetary health" to satisfy the metric.

- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:

    1. Describe how the environment and human health interact at different levels.

    2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.

    3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.

- **Medical School vs. Institution:** When "medical school" is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (for example, undergraduate departments (USA), other related departments eg Public Health, Population Health departments). In contrast, when "institution" is specified in the report card, we are referring to the university more broadly. Any resource reasonably accessible by medical students, no matter where in the institution the resource comes from or if it is specifically targeted for medical students, can meet this metric.

- **Environmental history (Metric 19 in curriculum section):** This is a series of questions providers are taught to ask during medical encounters that elicit patients' exposures and

environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mold after flooding. Key components include place of residence over the lifecourse, occupational history, food and water sources (e.g. meat from industrial feeding operations, regular fishing in contaminated water, access to clean drinking water), and exposure to air pollution.

- **Elective:** The word “elective” refers to an optional course or lecture series that a medical student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school.

- **Clerkship:** This is a term used in the USA to refer to placements that medical students go on e.g. Pediatrics, General medicine, Psychiatry. In the UK these are referred to as rotations or placements.

Planetary Health Curriculum

Section Overview: ***This section evaluates the integration of relevant planetary health topics into the medical school curriculum.*** *Today's medical students will be on the frontlines of tackling the health effects of climate and other environmental changes. Therefore, it is critical that medical students are trained to understand the health effects of these changes, as well as planetary health issues and principles more broadly. Topics like the changing geography of vector-borne diseases, the health consequences of air pollution, environmental health inequities, and disaster response principles must be part of every medical school's core curriculum.*

Curriculum: General

1. Did your medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	**Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.**
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.

Score explanation: The JMP does not generally provide elective courses for students to take. Students are highly encouraged to take at least one graduate course in any discipline at UC Berkeley per semester, and, on average, they take around 3-4 elective courses beyond the core requirements for graduation. The UC Berkeley School of Public Health offers at least one course related to environmental health sciences every semester, and JMP students are eligible to enroll. The UC Berkeley Sustainability website includes a list of 600 sustainability-related undergraduate and graduate courses offered from 2015-2018, and we recommend that the JMP should compile a list of popular planetary health courses available for students and make it accessible to students to facilitate enrollment in these courses.

JMP students are also eligible to take any electives offered at UCSF through the virtual platform. This includes the UCSF student-led ESH/planetary health electives: 1. Earth Health, 2. Women's Health, Environment, and Health Professional Activism, and 3. Rethinking Farm-Food-Health-Climate Connections.

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?	
3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, that discuss heat-related illnesses along with several other health implications of climate change. Examples include GEOG 149B: Climate Impacts and Risk Analysis and PB HLTH C271G: Health Implications of Climate Change. Components of the Problem-Based Learning (PBL) Curriculum (Core Medical Curriculum) do discuss this topic, and students develop testable learning objects around these themes. For example, the PBL curriculum includes a 3 day patient case on Susana Warden, who suffers from health complications due to extreme heat.	

3. Does your medical school curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	**This topic was covered in elective coursework.**
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, that discuss extreme weather related illnesses and their impact on the healthcare system. Examples include GEOG 149B: Climate Impacts and Risk Analysis and ESPM C22AC: Fire: Past, Present and Future Interactions with the People and Ecosystems of California. Components of the PBL Curriculum (Core Medical Curriculum) cover health impacts from toxic exposures, notably excluding wildfire smoke. We recommend that concepts of pulmonary complications from wildfire smoke and infectious complications from flooding, in addition to their correlation with the geospatial distribution of peoples in the Bay Area, be implemented into a PBL Case.	

4. Does your medical school curriculum address the impact of climate change on the changing patterns of infectious diseases?	
3	**This topic was explored in depth by the core curriculum.**

2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UC Berkeley offers graduate courses, available for JMP students, related to environmental health and infectious disease. Examples include PB HLTH 273: Environmental Determinants of Infectious Disease. Components of the PBL Curriculum (Core Medical Curriculum) do discuss this topic, and students develop testable learning objects around these themes. For example, the PBL curriculum includes a 3 day patient case and 2 day triple jump (examination) case, both of which cover zoonotic and environmental exposures to infectious pathogens. We recommend that the case makes it clear that the patient's diagnosis is directly linked to changes in environmental conditions and that this trend holds true for other infectious diseases.

5. Does your medical school curriculum address the respiratory health effects of climate change and air pollution?

3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UC Berkeley offers undergraduate and graduate courses, available for JMP students, related to the respiratory and cardiovascular health effects of air pollution. Examples include PB HLTH 290: Global Air Quality and Health. Components of the PBL Curriculum do discuss this topic. For example, a 3 day PBL case covers the medical experiences of the patient Marcela Dominguez--a resident of the Iron Triangle in Richmond--who is diagnosed with a respiratory condition. Students discuss this topic and develop testable learning objects around these themes.

6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat?

3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: As mentioned in metric 2, UC Berkeley offers courses, available for JMP students, that discuss heat-related illnesses along with several other health implications of climate change. These

courses cover cardiovascular health effects. Examples include GEOG 149B: Climate Impacts and Risk Analysis and PB HLTH C271G: Health Implications of Climate Change. Components of the Problem-Based Learning (PBL) Curriculum (Core Medical Curriculum) do discuss this topic, and students develop testable learning objects around these themes. For example, the PBL curriculum includes a 3 day patient case on Susana Warden, who suffers from health complications due to extreme heat. We recommend that the JMP integrate air pollution exposure into a patient's case of cardiovascular disease so that students also have the opportunity to explore the connection between pollution and heart disease.

7. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UC Berkeley offers courses, available for JMP students, that broadly focus on topics related to climate change, migration, refugees, and mental health. However, these are primarily courses for undergraduate students such as SOCIOL 137AC/ESPM 163AC: Environmental Justice: Race, Class, Equity, and the Environment. Components of the PBL Curriculum do discuss this topic. For example, a 3 day PBL case covers the medical experiences of the patient Carlos Sanders; students discuss this topic and develop testable learning objects around these themes.

8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?	
3	This topic was explored in depth by the core curriculum.
2	**This topic was briefly covered in the core curriculum.**
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UC Berkeley offers many undergraduate and graduate courses, available for JMP students, related to the intersection of food security, water security, food systems, and climate change. Examples include PB HLTH 206D: Food and Nutrition Programs and Policies in Developing Countries, GEOG 130: Food and the Environment, and ESPM 226: Interdisciplinary Food and Agriculture Studies. Components of the PBL Curriculum discuss food security but without direct connections to environmental factors. We recommend that the JMP integrate this topic in a Problem-Based Learning case and/or organize an enrichment session on this topic.

9. Does your medical school curriculum address the outsized impact of climate change on marginalized populations such as those with low SES, women, communities of color, Indigenous communities, children, homeless populations, and older adults?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	**This topic was covered in elective coursework.**
0	This topic was not covered.
Score Explanation: UC Berkeley offers courses, available for JMP students, that discuss environmental injustice and environmental determinants of health. Examples include ESPM 163AC/SOCIOL 137AC: Environmental Justice: Race, Class, Equity, and the Environment and PB HLTH C271G: Health Implications of Climate Change. Components of the PBL Curriculum cover environmental determinants of health (such as the aforementioned Marcela Dominguez case and Triple Jump examination case); however, there is no explicit focus on the effects of climate change specifically on oppressed populations.	

10. Does your medical school curriculum address the unequal regional health impacts of climate change globally?	
3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
Score explanation: Dr. Peter Chin Hong hosts an enrichment session (a required lecture which includes testable material outside of the PBL format) for the second year JMP students. This enrichment session includes discussion of unequal distribution of infectious diseases (such as Dengue, Zika, and COVID-19) as a result of climate change.	

Curriculum: Environmental Health & the Effects of Anthropogenic Toxins on Human Health

11. Does your medical school curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.

1	**This topic was covered in elective coursework.**
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, about reproductive health effects of environmental toxins. Examples include ESPM C148: Pesticide Chemistry and Toxicology and PBHLTH 210D: Reproductive and Perinatal Epidemiology. UCSF offers elective courses, available to JMP Students, such as the Environmental Health and Health Professional Activism Elective which includes a lunch talk from Dr. Santosh Pandipati on how the climate crisis impacts reproductive justice.	

12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, about environmental threats specifically concerning California. Examples include ESPM C46: Climate Change and the Future of California and ENERES 171: California Water. Components of the PBL Curriculum directly address contemporary and environmental threats in the East Bay. The Marcela Dominguez case yields learning objects on environmental injustice in Richmond, CA and discusses the health effects of multiple East Bay Industries. We recommend that the JMP integrate regional discussions beyond Richmond, CA.	

13. To what extent does your medical school emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
3	Indigenous knowledge and value systems are integrated throughout the medical school's planetary health education
2	**Indigenous knowledge and value systems as essential components of planetary health solutions are included briefly in the core curriculum.**
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in elective coursework.
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, about the relationship between Indigenous societies and the environments that shape, and are shaped by them. Examples include ESPM 235: Indigenous Environmental Studies. These topics are also integrated into the PBL Curriculum. Each case begins with a land acknowledgment and updated information on local	

indigenous movements and organizations, including those that engage with the Environmental Justice, land protection, and water protection movements.

14. Does your medical school curriculum address the outsized impact of anthropogenic environmental toxins on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, Indigenous populations, and older adults?	
3	**This topic was explored in depth by the core curriculum.**
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, that discuss environmental injustice and environmental determinants of health. Examples include ESPM 163AC/SOCIOL 137AC: Environmental Justice: Race, Class, Equity, and the Environment and PB HLTH C271G: Health Implications of Climate Change. Components of the PBL Curriculum cover environmental determinants of health (such as the aforementioned Marcela Dominguez case and Triple Jump examination case); there is explicit focus on the effects of anthropogenic environmental toxins and climate change on low SES women of color, especially those from migrant communities.	

Curriculum: Sustainability

15. Does your medical school curriculum address the environmental and health co-benefits of a plant-based diet?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	**This topic was covered in elective coursework.**
0	This topic was not covered.
Score explanation: UC Berkeley offers courses, available for JMP students, related to nutrition that discuss the importance of a plant-based diet; however, this topic is not covered in the JMP core curriculum. Examples include NUSCTX 161A/B: Medical Nutrition Therapy I/II. Components of the PBL Curriculum cover nutrition but without discussing a plant-based diet, relationships between local food production, sustainability, and health, or interventions available to medical providers. We recommend that the JMP integrate this topic in a Problem-Based Learning case and/or organize an enrichment session on this topic.	

16. Does your medical school curriculum address the carbon footprint of healthcare systems?

3	This topic was explored in depth by the core curriculum
2	This topic was briefly covered in the core curriculum.
1	**This topic was covered in elective coursework.**
0	This topic was not covered.

Score explanation: UC Berkeley offers courses, available for JMP students, related to carbon footprint of the healthcare industry, such as ESPM 250: Special Topics in Environmental Science, Policy, and Management: Sustainable Industry. The JMP curriculum does not include specific reference to the roles of the healthcare sector in contributing to climate change and does not advocate for the implementation of sustainable practices, such as avoiding unnecessary operating room waste. We recommend that the JMP include a lesson on healthcare and sustainability before students transition to clerkships, which could be added to the Patient Care and Clinical Skills curriculum or presented as an enrichment session.

17. Does your medical school curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (1 point each)	
1	Waste production within the healthcare system and strategies for reducing waste in clinical activities, such as in the operating room
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally anaesthetic gas options with reduced greenhouse gas emissions
1	**The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on de-prescribing where possible and its environmental and health co-benefits would fulfill this metric.**
1	**The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes for obesity. This is commonly known as social prescribing in the UK.**
1	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment

Score explanation:
Impact of Pharmaceuticals: Components of the PBL Curriculum directly address the relationship between prescription and climate health harm are discussed in. The Mary Carrol case yields learning objects on environmental impacts of antimicrobial overprescribing. The Erwin Kesterson case includes

a conversation with a patient who flushes his extra warfarin, and yields discussion of proper medication disposal.
Non-Pharmaceutical management: The PBL curriculum thoroughly discusses alternatives to medical therapy. The Peter Crawford case yields learning objects on non pharmaceutical management of behavioral health conditions. The Bobby Matos and Steve Sunderland cases yield thorough discussion of non pharmaceutical adjuvants to diabetes management. The Clinical Skills curriculum additionally dedicates a class session to diabetes management, which includes nutritional insights from Highland Hospital Diabetes educators.

Curriculum: Clinical Applications

18. In training for patient encounters, does your medical school's curriculum introduce strategies to have conversations with patients about the health effects of climate change?	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	**No, there are not strategies introduced for having conversations with patients about climate change**
Score explanation: The JMP has not offered any education to medical students related to talking to patients who have been affected by climate change. This is a topic that can be integrated into the Master Clinician Working Group (MCWG) curriculum before students start clerkships. The JMP can coordinate with UCSF faculty and staff including Dr. Nick Iverson to ensure this topic is covered during F2 and/or Career Launch portions of the curriculum.	

19. In training for patient encounters, does your medical school's curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	**No, the curriculum does not include strategies for taking an environmental history.**
Score explanation: The significance of taking an occupational and environmental history is briefly discussed in some Problem-Based Learning cases and the H&P structure class during MCWG, but students are not introduced to strategies for taking an environmental history or exposure history. Specific strategies for environmental history taking should be incorporated into the MCWG course or be deliberately integrated into pre-clerkship preceptorship experiences.	

Curriculum: Administrative Support for Planetary Health

20. Is your medical school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	**Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.**
0	No, there are no improvements to planetary health education in progress.
Score explanation: The Joint Medical Program executive team holds monthly curriculum improvement meetings. Gustavo Valbuena, who leads the PBL curriculum, has additionally piloted a PBL working committee, where student suggestions and feedback are discussed and implemented into the cases. These developments operate under the JMP's new mission of developing antiracist physicians. Improvements to the ESH components of the curriculum are guided by the committees dedicated to this goal.	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?	
6	**Planetary health/ESH topics are well integrated into the core medical school curriculum.**
4	Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in (a) standalone lecture(s).
0	There is minimal/no education for sustainable healthcare.
Score explanation: The JMP does not operate under an organ-based medical curriculum, but rather uses the multi-systemic approach of PBL. Through PBL, many core medical topics are covered through weekly medical cases, and tested learning objects are specific to each case. A weekly case usually includes physiologic, pharmaceutical, pathologic, clinical, and social learning objects and discussions. Hence, topics of environmental hazards and health impacts are included in several cases over the course of all 2.5 years, and this information is integrated with other elements of the patient's lived experience and clinical course. Such cases have been previously referenced.	

22. Does your medical school employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme

throughout the course?	
1	Yes, the medical school has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	**No, the medical school does not have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.**
Score explanation: The JMP currently does not have a faculty member or subcommittee dedicated to integration of planetary health into the curriculum.	

Section Total (46 out of 69)	**B**

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Interdisciplinary Research

Section Overview: ***This section evaluates the quality and quantity of interdisciplinary planetary health research at the medical school and broader institution.*** *Interactions between health and the environment are complex and multifactorial. While climate change has been extensively studied from an environmental science perspective, planetary health is an emerging field. As leading health institutions with talented researchers and research resources, medical schools should fund research studying the health effects of climate change and anthropogenic environmental toxins. This obligation is particularly strong because the public and policymakers are more attentive to climate change when its implications for human health are emphasized.*

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school?	
3	**Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health or healthcare sustainability.**
2	Yes, there are individual faculty members at the School of Medicine who are conducting research related to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the institution, but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.
Score explanation: UC Berkeley has several departments and centers devoted to environmental science research (e.g., Environmental Science, Policy, and Management (ESPM), Energy and Research Group, Center for Law, Energy, and the Environment, CERCH, Center for Occupational and Environmental Health). The School of Public Health has a specific department--the Division of Environmental Health Sciences--and most faculty members affiliated with the department are focusing on conducting planetary health research. The primary research interests of a few faculty members of the JMP focus on planetary health, and oftentimes, at least one student in each cohort of JMP students conducts research on an environmental health topic for their Master's Thesis.	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?	
3	**There is at least one dedicated department or institute for interdisciplinary planetary health research.**
2	There is not currently a department or institute for interdisciplinary planetary health research, but there are plans to open one in the next 3 years.
1	There is an Occupational and Environmental Health department, but no interdisciplinary department or institute for planetary health research.

0	There is no dedicated department or institute.

Score explanation: The School of Public Health's Division of Environmental Health Sciences is a robust department of faculty members and students conducting multidisciplinary research. Areas of research include energy use, air/water pollution, climate change, occupational exposures, global health, epigenetics, environmental engineering, and a variety of other disciplines. The Environmental Change Research Network (ECRN) @ Berkeley is a hub for interdisciplinary research to address climate change.

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your medical school?

3	**Yes, there is a process in which community members impacted by climate and environmental injustice have decision-making power in the climate + environmental research agenda.**
2	Yes, there is a process in which community members impacted by climate and environmental injustice advise the climate + environmental research agenda.
1	No, but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.
0	There is no process, and no efforts to create such a process.

Score explanation: The Center for Environmental Research and Children's Health (CERCH) at UC Berkeley School of Public Health is home to the scientific study of environmental exposures and their impacts on pregnant women and children's health. Their research programs investigate pesticides, flame retardants, chemicals in plastics, cosmetics and other consumer products and many other exposures. CERCH prioritizes engaging communities to inform study design, implementation, and dissemination and helping to identify key solutions to pressing environmental issues. Input from 8 key community partners plays a major role in maximizing the appropriateness and efficiency of study activities while at once fostering rich dialogues and facilitating local capacity building opportunities.

4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?

3	**There is an easy-to-use, adequately comprehensive website that centralizes various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.**
2	There is a website that attempts to centralize various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The institution has an Office of Sustainability website that includes some resources related to health and the environment.

0	There is no website.

Score explanation: Information on planetary health, research groups, recent publications, educational materials, and community organizations is available on several UC Berkeley-affiliated websites. Examples include sites for the School of Public Health Division of Environmental Health Sciences, Center for Environmental Research and Children's Health (CERCH), Center for Occupational and Environmental Health, and Berkeley Office of Sustainability.

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	Yes, the **medical school** has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	**Yes, the institution has hosted at least one conference or symposium on topics related to planetary health in the past year.**
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.

Score explanation: The UC Berkeley School of Public Health annually hosts the Environmental Health Sciences Symposium, which is a small event where students can showcase their research. However, there has been no large national-level conference related to planetary health that has been recently held by the UC Berkeley School of Public Health.

6. Is your medical school a member of a national or international planetary health or ESH organization?	
1	**Yes, the medical school is a member of a national or international planetary health or ESH organization**
0	No, the medical school is not a member of such an organization

Score explanation: The UC Berkeley School of Public Health and UCSF School of Medicine are both listed as members of the Global Consortium on Climate and Health Education.

Section Total (16 out of 17)	**A**

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Community Outreach and Advocacy

Section Overview: ***This section evaluates medical school engagement in community outreach and advocacy efforts associated with planetary health.*** *Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of color. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.*

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	**Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.**
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.

Score explanation: The School of Public Health has many professors who work on community-based participatory research projects in partnership with community organizations. Specifically, Rachel Morello-Frosch is working with the Asian Pacific Environmental Network (APEN) on a research project investigating the projected impact of rising sea levels on local communities. Kim Harley is leading a youth-driven research and advocacy project with high school students in Salinas, investigating resident exposure to pesticides and chemicals in cleaning products. John Balmes is Physician Member of the California Air Resources Board, and Janet Perlman is involved with the Medical Society Consortium on Climate and Health, Physicians for Social Responsibility, and the American Academy of Pediatrics on climate change issues. JMP students and graduates are also engaged with community organizations, including Christina Chen who collaborated Sunrise Movement Bay Area for her thesis project on environmental activism and mental health; Raj Fadadu, who is Founder/Director of the Environmental Health Working Group of the Berkeley Climate Action Coalition; and Sarah Schear, who is Advocacy Co-Chair of Medical Students for a Sustainable Future, Co-Chair of the AAPCA1 Climate Change and Health Task Force, co-founder of Climate Health Now, incoming Student Board Member of Physicians for Social Responsibility - Bay Area, and a member of Sunrise Movement Bay Area.

2. Does your medical school offer community-facing courses or events regarding planetary health?

3	**The medical school offers community-facing courses or events at least once every year.**
2	The medical school offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The institution has offered community-facing courses or events, but the medical school was not involved in planning those courses or events.
0	The medical school has not offered such community-facing courses or events.
Score explanation: The UC Berkeley School of Public Health offers many events open to the public, some of which include planetary health. However, many of these events are not advertised to communities impacted by the topics presented. JMP faculty have been involved in several public-facing events, highlighted below. Outside of the School of Public Health, UC Berkeley offers a community-facing course called Edible Education 101, which covers topics in sustainable food systems. Public-facing events offered by the School of Public Health on a yearly basis include the following: SPH Brown Bag: Chronic Exposure to Traffic-Related Air Pollution and Cancer Risk: Are we all Susceptible?; SPH Brown Bag: Research to Regulation: a Physician-Scientist's Search for Healthy Equity in Air Quality and Climate Change; SPH Brown Bag: Thermal thresholds increase the vulnerability of coastal Los Angeles to temperature-linked increases in West Nile virus transmission.	

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
2	Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	**Yes, planetary health and/or sustainable healthcare topics are sometimes included in communication updates.**
0	Students do not regularly receive communications about planetary health or sustainable healthcare.
Score explanation: Planetary health and sustainable healthcare are frequently mentioned in articles and updates from the Berkeley Graduate Division Monthly newsletter, the Berkeley Division of Student Affairs monthly event update, and the Berkeley Public Health monthly research newsletter.	

4. Does the institution or main affiliated hospital trust engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?	
2	**Yes, the institution or main affiliated hospital trust offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.**

1	Yes, the institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are no such accessible courses for post-graduate providers
Score explanation: At UCSF, the JMP's affiliated hospital system, there was a "Vulnerable Workers and Communities at Environmental Risk and Updates in Occupational and Environmental Medicine" CME conference. On the continuing medical education website linked from the UCSF medical education page, there is an online module on "Clinician Climate and Health Training" that offers three 20-minute modules on the links between climate change and health. This training module was developed by the San Francisco Department of Public Health's Climate Change and Health Program and is narrated by Jonathan Fuchs, MD, MPH, a clinical professor of medicine at UCSF. CME courses can be viewed here.	

5. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about environmental health exposures?	
2	**Yes, all affiliated hospitals have accessible educational materials for patients.**
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated medical centers have accessible educational materials for patients.
Score explanation: Regarding our affiliated medical center (UCSF): "The Program on Reproductive Health and the Environment at UCSF has produced a series of online and printed patient-facing brochures about toxic exposures called "Toxic Matters," "Work Matters," "Pesticides Matter," and "Food Matters." These brochures can be found here: https://prhe.ucsf.edu/info." -Planetary Health Report Card 2021: UCSF.	

6. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about climate change and health impacts?	
2	**Yes, all affiliated hospitals have accessible educational materials for patients.**
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated hospitals have accessible educational materials for patients.
Score explanation: The JMP is affiliated with UCSF Health, ZSFGH, and the SF VA. Each of these hospital systems "have educational materials related to climate change [including] San Francisco Climate and Health Profile & 3.7 Greenhouse Gas Emissions and Climate Change" -Planetary Health Report Card 2021: UCSF.	

Section Total (13 out of 14)	**A**

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Support for Student-Led Planetary Health Initiatives

Section Overview: ***This section evaluates institutional support for student-led planetary health initiatives, such as funding, fellowships, programming, and student groups.*** *Planetary health is a young field and, as young people facing a future deeply shaped by climate change, students are often some of the first at an institution to engage with it. Institutions should provide support for students to engage in sustainability quality improvement (QI) initiatives, discover mentors in their area of interest, and receive funding for planetary health projects.*

1. Does your institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	**Yes, the institution *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum.**
1	The medical school encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available and there is no requirement to participate.
0	No, the institution does not offer opportunities or support for sustainability initiatives or QI projects.
Score explanation: The JMP's requires second year students to complete a Healthcare Quality course which includes a Quality Improvement group project. Sustainability initiatives, however, are not covered within the scope of this course. Students can apply for funding for sustainability initiatives through The Green Initiative Fund (TGIF) at UC Berkeley. TGIF "provides funding, via grants, for projects that improve and support UC Berkeley's campus sustainability efforts", which include quality improvement efforts and projects that promote sustainable modes of transportation, increase energy and water efficiency, restore habitat, promote environmental and food justice, and reduce the amount of waste created by UC Berkeley. We recommend that these resources be matched with integration of sustainable QI projects and training into the core curriculum.	

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	**The institution has a specific research program or fellowship for students interested in doing planetary health/sustainable healthcare research.**
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare but these require student initiative to seek these out and carry them out in their spare time.
0	There are no opportunities for students to engage in planetary health/sustainable healthcare research.

Score explanation: Faculty and graduate and undergraduate students at the School of Public Health have published impactful research on multiple aspects of planetary health, and their research has formed the basis of policy advocacy and decisions in the state of California and nationally. Rachel Morello-Frosch at the School of Public Health participated in a campus-wide working group to envision the future of UC Berkeley research on "Environmental Change, Sustainability and Justice" that produced this report. Many JMP students who conduct planetary health research for their Master's Thesis will go on to publish their findings and present them at national conferences. For example, Anthony Nardone's JMP thesis research demonstrated that higher diesel particulate emissions in redlined census tracts in California are associated with increased Emergency Department visits for asthma. This research supports California's efforts to reduce environmental injustice in disadvantaged communities: AB 617 implementation.

The University of California's Carbon Neutrality Initiative offers year-long paid fellowships to which all UC students, including JMP students, can apply. These include the Carbon Neutrality Initiative Fellowships and the Global Food Initiative Fellowships. The Berkeley Food Initiative also offers a year-long Graduate Research and Leadership Fellowship for community-based research projects and a summer Graduate Student Research Fellowship. These opportunities should be publicized to JMP students, as most of us did not previously know about them.

3. Does the medical school have a webpage where medical students can find specific information related to planetary health and/or sustainable healthcare activities and mentors within the medical school? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.	
2	The medical school has a webpage with specific information related to planetary health or sustainable healthcare that includes up-to-date information on relevant initiatives and contact information of potential mentors.
1	**There is a medical school webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information.**
0	There is no medical-school specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.
Score explanation: UC Berkeley has a general directory of faculty mentors through which students can search for mentors in all fields, including planetary health, and the School of Public Health Division of Environmental Health Sciences has a website listing their faculty; however, no comprehensive website or directory exists for identifying faculty mentors in planetary health across UC Berkeley.	

4. Does your medical school have registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?	
2	Yes, there is a student organization with faculty support at my medical school dedicated to planetary health or sustainability in healthcare.

1	**Yes, there is a student organization at my medical school dedicated to planetary health or sustainability in healthcare but it lacks faculty support.**
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.
Score explanation: There are a number of UC Berkeley-wide student groups focused on sustainability, but there is no funded and faculty mentored student organization within the JMP dedicated to planetary health and sustainability. Currently, JMP students are engaged in a national network called Medical Students for a Sustainable Future but without formal registration, funding or faculty advising. We hope to formally register and obtain funding and mentorship for a JMP chapter.	

5. Is there a student liaison representing sustainability interests who serves on a medical school or institutional decision-making council to advocate for curriculum reform and/or sustainability best practices?	
1	Yes, there is a student representative that serves on a medical school or institutional decision-making council/committee.
0	**No, there is no such student representative.**
Score explanation: The JMP does not currently have a student liaison to advocate for sustainability in the monthly curriculum improvement meetings. Gustavo Valbuena, who leads the PBL curriculum, has additionally piloted a PBL working committee, where student suggestions and feedback are discussed and implemented into the cases. We recommend that a sustainability representative be integrated into this new structure.	

6. In the past year, has the institution had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)	
1	**Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.**
1	**Panels, speaker series, or similar events related to planetary health that have students as an intended audience.**
1	**Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.**
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.
1	**Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.**

1	**Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)**

Score explanation:
Garden: UC Berkeley offers many opportunities to learn about and engage in sustainable food systems. These include volunteering in one of many on-campus gardens and working on food recovery after events.
Conferences, speaker series, symposia, or similar events: The School of Public Health Brown Bag series is student-facing and has included multiple sessions on planetary health topics. One example is the "Advancing Environmental Health through Youth Participatory Action Research."
Environmental Justice Community: JMP Students are required to complete a Health and Behavior Breadth Course. A portion of this course is dedicated to community based participatory research, and includes a panel of community members involved in the CHAMACOS Study and the Richmond Youth Air Quality Initiative.
Volunteer Opportunities: UC Berkeley's Student Environmental Resource center provides many opportunities to participate in environmental resiliency efforts in the East Bay, including resiliency network and food collection volunteer shifts.
Wilderness or outdoor programs: Outdoor programs are offered through the Cal Hiking and Outdoor Society (CHAOS), and its Constitution includes having "minimal human impact on the environment" in its Statement of Purpose. UC Berkeley Recreational Sports also offers trips through Cal Adventures, which include "appreciation of the natural environment" in their benefits but do not explicitly mention Leave No Trace principles.

Section Total (11 out of 15)	**B**

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Campus Sustainability

Section Overview: ***This section evaluates the support and engagement in sustainability initiatives by the medical school and/or institution.*** *The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavor, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinizing every aspect of how our systems operate, from where we source our energy, to how we build our infrastructure, to what companies we invest in. Our medical schools, clinics, and hospitals must set the standard for sustainable practices, and show other sectors what is possible when it comes to minimizing environmental impact.*

1. Does your medical school and/or institution have an Office of Sustainability?	
3	**Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.**
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff, but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
Score explanation: The JMP's basic medical science curriculum is held at UC Berkeley, while its clinical training and affiliated hospital system is housed at UCSF. UC Berkeley's Office of Sustainability, which supports JMP students through their first 2.5 years, consists of a full time director, several staff members, graduate fellows, and undergraduate fellows. UCSF, where JMP students complete their clinical training, has an Office of Sustainability with a full time director. "The Office of Sustainability organizes the Advisory Committee on Sustainability, which includes campus representation from each school, including the school of medicine (Dr. Katherine Gundling). This committee helps to oversee energy, utilities, infrastructure, food, and purchasing sustainability at UCSF's medical campuses" - Planetary Health Report Card 2021: UCSF.	

2. How ambitious is your medical school/institution's plan to reduce its own carbon footprint?	
4	The institution has a stated goal of carbon neutrality by 2030 or earlier and the medical school / institution has a well-defined and adequate plan in place to achieve this goal.
3	Yes, there is a stated carbon neutrality goal by at least 2040 and the medical school/institution has a well-defined and adequate plan in place to achieve this goal.
2	**Yes, there is a stated carbon neutrality goal by at least 2040, but the medical school/institution has not created a plan to reach that goal or the plan is inadequate.**

1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.

Score explanation: In 2013 the UC system announced the Carbon Neutrality Initiative and pledged to be carbon neutral by 2025 from the following carbon emission sources: campus-generated energy, campus fleet and purchased electricity. UC Berkeley has taken the first steps toward neutrality by reducing emissions faster than required by California and UC guidelines. Berkeley's 2025 Carbon Neutrality Planning Framework provides a high-level course of action and strategies to meet the target. For Berkeley to get to carbon neutrality, or zero-net carbon emissions from building and fleet energy use, the campus is aiming to reduce emissions by about 150,000 tons. This reduction represents 80% of Berkeley's carbon emissions. The remaining 20% of Berkeley's emissions outside of the 2025 goal are associated with the campus commute, business air travel, waste, and water. A neutrality date for these other scope 3 emissions is currently 2050.

3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilize renewable energy?

3	Yes medical school buildings are 100% powered by renewable energy
2	**Medical school buildings source >80% of energy needs from off-site and/or on-site renewable energy.**
1	Medical school buildings source >20% of energy needs from off-site and/or on-site renewable energy.
0	Medical school buildings source <20% of energy needs from off-site and/or on-site renewable energy.

Score explanation: JMP classes are split equally between two buildings at UC Berkeley: University Hall and Berkeley Way West. Berkeley Way West, Built in 2017, was designed to meet the gold LEED standard. UC Berkeley's Cogeneration Plant provides approximately 90% of the electricity and 100% of the steam needs of the main campus. By generating steam (for heat) and electricity simultaneously the plant is able to boast an overall energy conversion efficiency of 76%. The remaining 10% of electricity is either imported from certified/verified clean and renewable sources, produced on-site from clean and renewable sources, or purchased from PG&E. Imported electricity from East Bay Community Energy and from the UCOP Wholesale Power Program was certified by a third party as 100% clean in 2019. Solar PV systems are operational at six sites on campus: Eshleman Hall, the MLK Student Union, the Recreation Sports complex, Jacobs Hall, Chou Hall and the University Village apartments.

4. Are sustainable building practices utilized for new and old buildings on the medical school campus, with design and construction of new buildings and remodeling of old buildings conforming to a published sustainability rating system or building code/guideline?

3	**Yes, sustainable building practices are utilized for new buildings on the medical school campus and the majority of old buildings have been retrofitted to be more sustainable.**
2	Sustainable building practices are utilized for new buildings on the medical school campus, but most old buildings have not been retrofitted.
1	Sustainable building practices are inadequately or incompletely implemented for new buildings.
0	Sustainability is not considered in the construction of new buildings.

Score explanation: As mentioned, JMP classes are split equally between two buildings at UC Berkeley: University Hall and Berkeley Way West (gold LEED certified). New UC buildings or major renovations do not use on-site fossil fuel combustion, such as natural gas, for space and water heating. An energy management system (EMS) that controls ventilation, temperature, lights and operating hours is used on all buildings (new and old) to balance building occupant comfort with energy conservation. The campus Energy Office (EO) tracks, monitors, and manages energy usage campus-wide to improve design, performance, and operation of buildings; reduce energy costs; and increase awareness of energy and water usage. UC Berkeley is in the process of retrofitting all campus buildings with LED lighting fixtures by replacing end-of-life T8 fluorescent lighting with LED technology. UC Berkeley's floor area is operated and maintained in compliance with UC Policy on Sustainable Practices, but it is not certified.

5. Has the medical school implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?	
2	**Yes, the medical school has implemented strategies to encourage and provide environmentally-friendly transportation options such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.**
1	The medical school has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.

*Score explanation:*The JMP's basic medical science curriculum is held at UC Berkeley, while its clinical training and affiliated hospital system is housed at UCSF. UC Berkeley offers a comprehensive package of programs to encourage moves to more sustainable forms of transportation – all with the goal of reducing traffic and parking demands. The program offers a suite of alternative commute benefits to UC Berkeley faculty, staff, and students. The program offers bus pass programs, transit subsidies, discounted carpool parking pricing, pre-tax purchases, regional ride-matching services, and a host of other benefits and incentives. JMP students also benefit from UCSF's shuttle service that connects all five major campuses, bike racks for cycling commutes and rideshare options.

6. Does your medical school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?	
2	**Yes, the medical school has both compost and recycling programs accessible to students and faculty.**
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.
Score explanation: The majority of all waste generated by UC Berkeley is diverted from landfills through recycling, composting, donating or re-selling. The amount of municipal solid waste being sent to landfill has been dropping annually, while the population has grown. The campus also diverts the majority of its construction and demolition waste away from landfills and has a robust electronics recycling and hazardous waste disposal program. UC Berkeley's Zero Waste Plan delineates goals to achieve Zero Waste (90% diversion of municipal solid waste) by 2020 & Beyond. The JMP's medical school buildings (University Hall and Berkeley Way West) have multiple waste bins for trash, recycling, and composting. Classrooms contain recycle and compost bins, while 3-in-1 waste bins are placed on each floor and near main entrances to the buildings.	

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
3	Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.
2	**There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is engaged in efforts to increase food and beverage sustainability.**
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.
Score explanation: UC Berkeley defines sustainable food according to the University of California Policy on Sustainable Practices. Criteria for determining sustainability of food include locally grown (within 250 miles of campus), organic, fair trade or humane. Berkeley vendors continue to increase the percentage of their purchases of sustainable food, reaching over 20%. One of Berkeley's Sustainable Food Goals is to certify at least one food service business as a green certified business.	

8. Does the medical school or associated institution apply sustainability criteria when making decisions about supply procurement?

3	**Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.**
2	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.
Score explanation: The University of California sustainability procurement guidelines outlines the University's targets for sustainable procurement as well as requirements for UC sustainable procurement practices. This Guidelines document outlines what the University considers to be sustainable at the product, product category, service, or industry level. UC Berkeley has established several sustainable procurement goals *beyond* those of the UC guideline, including 25 percent green spend and 25 percent economically and socially responsible spend in specific product categories.	

9. Are there sustainability requirements or guidelines for events hosted at the medical school?	
2	Every event hosted at the medical school must abide by sustainability criteria.
1	**The medical school strongly recommends or incentivizes sustainability measures, but they are not required.**
0	There are no sustainability guidelines for medical school events.
Score explanation: JMP student groups and faculty plan events through UC Berkeley. Berkeley's Green Event Certification helps event planners reduce their impact in a range of areas, including catering and food, venues, and waste reduction. Events can be certified under three categories: green, zero waste, and zero waste green. JMP students and faculty are encouraged but not required to abide by these recommendations.	

10. Does your medical school have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
2	**Yes, the medical school has programs and initiatives to assist with making lab spaces more environmentally sustainable.**
1	There are guidelines on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are no efforts at the medical school to make lab spaces more sustainable.
Score explanation: JMP students perform research with both UC Berkeley and UCSF laboratories. At UC Berkeley, Green Labs was established in 2012: this program includes a checklist, information on	

green lab actions and product incentive promotions, and engagement with interested labs in an information and best practice exchange. At UCSF, there is a LivingGreen program where a team of experts will meet with your lab on-site and provide recommendations to reduce the lab's environmental impact and get co-workers engaged, with follow-up visits and a multi-tiered certification awarded.

11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
4	**The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.**
3	No, the institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest, but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
Score explanation: On May 19, 2020, the University of California system announced that it had "capped a five-year effort to move the public research university system's $126-billion portfolio into more environmentally sustainable investments, such as wind and solar energy." The companies it pledged to divest from included but were not limited to the top 200 publicly-traded fossil fuel companies. "UC has sold more than $1 billion in fossil fuel assets from its pension, endowment and working capital pools and surpassed its five-year goal of investing $1 billion in clean energy projects" -"UC becomes nation's largest university to divest fully from fossil fuels." Los Angeles Times.	

Section Total (26 out of 31)	**84**

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Grading

Section Overview
This section focuses on the grading of the report card. The institution received a grade for each of the individual sections as well as an overall institutional grade. Section point totals were tallied, divided by the total points available for the section, and converted to a percentage. The overall institutional grade is a weighted average of the section grades, with curriculum receiving a higher weight owing to its larger number of metrics. Letter grades for each section and the institution overall were then assigned according to the table below.

Letter Grade*	Percentage
A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	0% - 19%

**Within each grade bracket, a score in the top 5% (_5 to_9%), receives a "+", and a score in the bottom 5% (_0-_4%) receives a "--". For example, a percentage score of 78% would be a B+.*

Planetary Health Grades for the UCSF-UC Berkeley Joint Medical Program
The following table presents the individual section grades and overall institutional grade for the UCSF-UC Berkeley Joint Medical Program on this medical-school-specific Planetary Health Report Card.

Section	Raw Score	Letter Grade
Planetary Health Curriculum (30%)	(46 / 69) x 100 = 66%	B
Interdisciplinary Research (17.5%)	(16 / 17) x 100 = 94%	A
Community Outreach and Advocacy (17.5%)	(13 / 14) x 100 = 93%	A
Support for Student-led Planetary Health Initiatives (17.5%)	(11 / 15) x 100= 73%	B
Campus Sustainability (17.5%)	(26 / 31) x 100 = 84%	A-
Institutional Grade	**(Ax0.3 + Bx0.175 + Cx0.175 + Dx0.175 + Ex0.175) = 80%**	**A-**

Report Card Trends

Section Overview
This graph demonstrates trends in overall and section grades for the years in which the UCSF- UC Berkeley Joint Medical Program has participated in the Planetary Health Report Card initiative.